

A Case Study of Integrated Sport Sciences for an Olympic Archer

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Abstract

Chinese Taipei organized and formed a sport science team for the National archery team targeting the 2004 Athens Olympic Games. Working with the National archery team for approximately one and a half years, Chinese Taipei archers achieved significant improvement in performance, winning a bronze medal in the women's team event and 4th and 6th places in the women's single events in the Athens 2004 Olympics. This report intends to provide an in-depth description on how sport science was applied to enhance archers' performance. Specifically, we report the intervention processes of psychological skill training (PST) and real-time technique analysis feedback for one female top archer who was the key member in securing the bronze medal in the women's team event. As a case study, both qualitative and quantitative data were included. The procedures of the scientific support were sport science education for archers and coaches, diagnosis of archers, followed by designing an intervention program and determining the intervention and training effect before competition. Results indicated a positive feedback from the athletes and coaches achieving a significant improvement in performance. In addition to the exciting results, this model of sport science team integrated with athlete and coaches is also a promising approach to help elite athletes enhance sport performance. In conclusion, this case study is about integrating sport science in order to enhance archery performance. Because of the success of this model, its application for other competitive sports is promising and warrants for further investigation.

Keywords: Biomechanics, Sport psychology, Performance enhancement

1. Introduction

Chinese Taipei archers won a bronze medal in the women's team event and 4th and 6th places in the women's single event in the Athens 2004 Olympics. These results may not appear impressive for other countries that obtained far more medals in the Games, but it is a significant achievement for Chinese Taipei. This accomplishment was particularly impressive considering both the inexperience of the team and their modest level of performance in the past. The best that Chinese Taipei had ever done in previous Olympics was 7th place in both men's team and women's single competitions. Coincidentally, this was the first Olympics for both the coaches and athletes. The successes of this team were primarily due to the hard training of coaches and athletes; nonetheless, help from sport science played an important role. Cooperation between sport scientists and coaches started approximately a year and a half before the Olympics. The fields of sport science

integrated with the training regimen covered biomechanics and sport psychology.

The "Olympic Round" is different from the normal archery round; it is a true elimination round, generating excitement among archers, spectators and media. Several types of emotions for the competitors are generated during the 18-arrow round match. The archer must focus while shooting one by one without being distracted by a 12-arrow elimination round match. This causes a lot more stress on the archer knowing that every arrow truly counts. Therefore, what is the best strategy for shooting during the elimination rounds? What is the best training approach for Olympic rounds? These were the questions being faced by both the coaches and athletes of the Chinese Taipei archery team, especially with this being their first Olympics. Therefore, the national training center organized a sport science team especially for the archery team.

Prior research has indicated that gaps exist between theory and practice [1,2]. Although numerous studies have reported the effectiveness of sport science on performance enhancement, problems in application issues still exist [3], specifically on how both art and science knowledge can be implemented and used together. As such, this report intends to provide an in-depth description of how sport science that has been

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